

MEDICINE TODAY

Current comment on medical progress, discussion of selected topics from recent books or periodic literature, by contributing members. Every member of the California Medical Association is invited to submit discussion suitable for publication in this department. No discussion should be over five hundred words in length.

Medicine

Seasonal Hay Fever—Some Problems in Treatment.—Almost two decades have elapsed since Noon¹ and Freeman² in 1911 published from Sir Almroth Wright's laboratory in London the first reports of the successful treatment of hay fever by active immunization. Despite the tremendous amount of work done by American and European investigators since that time, many practical problems remain unsolved. The solution of these are essential before the aims of treatment can be more successfully achieved. It is true as Feinberg³ has emphasized in a recent report on the progress in hay fever therapy that most workers are now obtaining some degree of relief or improvement in a much larger percentage of their patients, but that wide differences exist in the results of even those physicians who are devoting much time to this work is quite apparent from their recent publications. This great discrepancy in the results of treatment are to be sought, in the main, in the absence of a standard method of pollen extraction and of biologic assay and in the lack of knowledge concerning the best route of inoculation, the relative merits of preseasonal, coseasonal and perennial desensitization, and lastly, in the period over which treatment should be extended. It is my purpose to discuss briefly some of these problems.

The occurrence of group reactions in pollen sensitization in a large percentage of patients has often made the selection of the appropriate pollen or pollens for treatment very difficult. Because the pollens of closely allied families of plants have in common a characteristic structural arrangement of the protein molecule it is the rule, for example, that patients sensitive to Kentucky blue grass or rye grass also give reactions to many other members of the Gramineae family. But treatment to be successful must be carried out with the pollen in the patient's environment, the period of pollination of which corresponds with the patient's symptoms. This conclusion would seem to be justified on the basis of good clinical observation, although it is true that there is some experimental evidence to controvert it.

One of the great obstacles to the development of a standard method of hay fever therapy is the lack of a standard method of extracting pollen protein and of a standard method of biologic assay of these extracts. There is as yet no United States standard of potency. The original Noon pollen unit expressed in quantity of pollen toxin which can be extracted from the thousandth part of a milligram of pollen is still in use. But the

term "pollen unit" conveys no information, because the effective strength of an extract depends on the quality and purity of the pollen used and on the method of its extraction. The determination of the potency of an extract based upon its nitrogen content has not been found a reliable method of standardization by all workers. Indeed there is still some question whether the antigenic properties of a pollen extract go hand in hand with its nitrogen content. At present the effective strength of an extract can be measured only clinically. The initial dose can be determined by the reactions obtained when the patient is tested to various dilutions of the antigen. Further increments are made only until a dose is reached which gives the patient relief of symptoms, for as Rackemann⁴ has shown, success in treatment demands a course of doses of a size and extent which is optimal for the patient.

The subcutaneous route of injecting pollen antigen used in the original work of Noon has been employed by most workers. In recent years Phillips⁵ has called attention to certain advantages of the intradermal method of injection, particularly in very sensitive patients in whom constitutional reactions are feared and in those in whom coseasonal treatment is desirable. Further studies of the value of intradermal injections should be made because, as Kämmerer⁶ suggests, our knowledge of the epidermis as an immunologic organ is still meager, and it may be theoretically possible that a more effective desensitization may be attained by this route than by the subcutaneous one.

Whereas treatment before the season is the method of choice in most instances, it should at times be supplemented by coseasonal and perennial treatment. As Vaughan⁷ and others have emphasized, the injection of small amounts of pollen extract daily or every other day during the season frequently produces great amelioration of symptoms not only in patients who first present themselves during the season, but also in those who have not been improved by preseasonal inoculations.

The rationale of coseasonal treatment by the short interval method is well supported by what we know of the mechanism underlying induced hypersensitiveness produced in animals by the inoculation of antigenic substances. Multiple injections of a protein antigen given to a normal animal at short intervals causes the formation of antibodies in much larger quantities so that when the same antigen is given to such an animal later the excess of circulating antibody combines with it and thus prevents the contact of antigen with

the sensitized cells. It is not unlikely that an increased tolerance to the inhalation of large amounts of pollen protein during the season may be accomplished by bringing about a similar state of desensitization in the hay fever patient.

A further improvement in the management of these patients has been recommended by Brown.⁸ This worker suggests that the hay fever patient be treated throughout the year so that the tolerance to pollen protein which has been built up by preseasonal and coseasonal treatment be maintained. This makes it unnecessary to start the treatment each year as though the case were a new one. The chief precaution essential in using the annual treatment is the careful observation of the patient after each injection while the interval between treatments is being lengthened or when a change is made from an old extract to a new one. In a limited experience with this procedure we have been impressed with the uniformly good results as compared with those obtained by the preseasonal or coseasonal methods alone or in combination. Because of our meager knowledge of the immunology of hay fever, it is as yet impossible to say whether or not perennial inoculations produce a more prolonged state of desensitization of the body cells.

Concerning the duration of hay fever treatment there is as yet no agreement among physicians. However, as time passes and the number of patients treated thoroughly and repeatedly for many seasons accumulates, it becomes possible to formulate some idea as to the period of treatment necessary to achieve more permanent relief. Henry⁹ states that successful desensitization for three to five seasons frequently gives permanent immunity; whereas Walker,¹⁰ in the analysis of a series of one hundred "apparently cured" hay fever cases, treated only preseasonally, has been successful in obtaining freedom from symptoms for three or more years.

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Medicine

A Method of Obtaining Blood of Small Infants for Examination.—In a review of the literature, I find no mention made of a technique that I have found simple and adequate in collecting the blood of small infants for serological examination. Puncture of the longitudinal sinus seems to be falling into disuse. Nor does the jugular vein always offer an easy avenue of approach. One also often finds it difficult to obtain an adequate supply of blood from a puncture made in the heel. The use of one of the veins of the cubital fossa proves an easy method in the hands of the experienced, but is frequently a time-consuming procedure.

The superficial temporal vein I have found readily accessible. The vein may be easily occluded as it passes over the zygomatic arch by pressure of the finger of an assistant. With the struggling of the infant the vein becomes quickly more tensely filled. The hair may be shaved over a space of about one centimeter in diameter and the skin sterilized with alcohol. The use of iodine in sterilizing the skin renders the vein less easy to see. A three-quarter-inch needle, twenty-three gauge, I have found most serviceable, and the use of a syringe of not too large bore eliminates the annoyance of air-bubble formation from too great suction.

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Urology

A Consideration of Certain Phases of Pyelitis.—Recent literature on the subject of pyelitis is so voluminous that it seems worth while briefly to emphasize a few of the points that are coming into prominence at this time.

Focal infection and urinary stasis are common causes. Stasis connects pyelitis closely with stricture of the ureter, but the latter can exist without pyelitis. Hunner states that 30 per cent of ureteral strictures have normal urinary findings, while one report records 69 per cent of sterile urine cultures in this condition.

The pathology is indicated by a variety of names: pyelitis, pyelocystitis, and pyelonephritis. The inflammation varies from a catarrhal one of the mucous membranes to a true nephritis which may destroy the kidney. Focal infection not only causes the infection but it may also cause the obstruction which results in urinary stasis—most often a ureteral stricture.

The Mayo Clinic reports two thousand cases of pyelonephritis in which stone was present in only thirty and only twelve required operative removal.

Hematogenous infection is most common, but other routes of infection probably frequently occur, especially the ascending route. Because of this, pyelitis is generally bilateral. In addition, there is a distinct type of unilateral pyelonephritis which sometimes demands nephrectomy. This is usually the result of septic infarction and will not be further considered.